

6 disposed between the first object and the second object;

7 a first driving system which moves the first object in  
8 the first direction, at least a part of the first driving  
9 system being on one side of the projection system;

10 a second driving system which finely moves the first  
11 object while the first object is moved by the first driving  
12 system, at least a part of the second driving system being  
13 on the one side of the projection system; and

14 a third driving system which moves the second object in  
15 the second direction, at least a part of the third driving  
16 system being on the other side of the projection system.--

a  
F  
1 --38. An apparatus according to claim 37, wherein  
2 the first object includes a mask having a pattern area, and  
3 the second object includes a work-piece on which a pattern  
4 of the mask is transferred.--

Sub  
S4  
1 --39. An apparatus according to claim 37, wherein  
2 said second driving system rotates said first object.--

1 --40. An apparatus according to claim 37, wherein  
2 said second driving system moves said first object two-  
3 dimensionally.--

40

1 --41. An apparatus according to claim 37, wherein  
 2 said first driving system includes a linear motor.--

1 --42. An apparatus according to claim 37, wherein  
 2 said third driving system includes a linear motor.--

1 --43. An apparatus according to claim 37, further  
 2 comprising:  
 3 a detecting system which detects a relative  
 4 relationship between the first object and the second  
 5 object.--

1 --44. An apparatus according to claim 43, wherein  
 2 said relative relationship includes a positional  
 3 deviation between said first object and said second  
 4 object.--

43

42

1 --45. An apparatus according to claim 43, wherein  
 2 said detecting system includes an interferometer.--

1 --46. An apparatus according to claim 37, further  
 2 comprising:  
 3 a supporting member which supports the first object,  
 4 wherein the first object is moved in the first  
 5 direction by moving the supporting member with the first  
 6 driving system, and the second driving system finely moves  
 7 the first object relative to the supporting member.--

29

1        --47. An apparatus according to claim 46, wherein  
2        the second driving system finely moves the first object  
3        without a weight of the supporting member.--

1        --48. An apparatus according to claim 37, further  
2        comprising:

3        a first supporting member which is movable in the first  
4        direction; and

5        a second supporting member which is movable relative to  
6        the first supporting member and which supports the first  
7        object,

8        wherein the first object is moved in the first  
9        direction by moving the first supporting member with the  
10       first driving system, and the first object is finely moved  
11       by moving the second supporting member, with the second  
12       driving system, relative to the first supporting member.--

1        --49. An apparatus according to claim 48, wherein  
2        at least a part of said second driving system is provided at  
3        said first supporting member.--

1        --50. An apparatus according to claim 48, further  
2        comprising:

3        a reflective surface disposed on the second supporting  
4        member; and

5        an interferometer, optically connected to the

6 reflective surface, which is used for detecting positional  
7 information of the first object.--

1 --51. An apparatus according to claim 48, wherein  
2 the second driving system finely moves the second supporting  
3 member without a weight of the first supporting member.--

1 --52. An apparatus according to claim 37, wherein  
2 an exposure beam irradiated onto said first object defines a  
3 rectangular illumination area on said first object.--

48  
1 --53. An apparatus according to claim 37, wherein  
2 said projection system includes a reflective and refractive  
3 optical system.--

Sub 48  
1 --54. An apparatus according to claim 38, wherein  
2 said second driving system moves said first object finely  
3 before the pattern area of said mask begins to be  
4 illuminated with an exposure beam.--

50  
1 --55. An apparatus according to claim 37, wherein  
2 the first driving system and the third driving system  
3 operate respectively to move the first object and the second  
4 object synchronously; and  
5 the second driving system operates to correct a  
6 positional relationship between the first object and the

7 second object during a synchronous movement of the first  
8 object and the second object.--

1 --56. An apparatus according to claim 37, wherein  
2 said first direction and said second direction are parallel  
3 and reverse to one another.--

1 --57. An apparatus according to claim 56, wherein  
2 the first driving system and the third driving system  
3 operate separately to move the first object and the second  
4 object synchronously in the respective first and second  
5 directions; and

6 the second driving system operates to correct a  
7 positional relationship between the first object and the  
8 second object during a synchronous movement of the first  
9 object and the second object.--

1 --58. An apparatus according to claim 37, further  
2 comprising:

3 a first measuring device which detects positional  
4 information of the first object; and

5 a second measuring device which detects positional  
6 information of the second object.--

1 --59. An apparatus according to claim 58, wherein  
2 the first driving system and the third driving system  
3 operate separately to move the first object and the second

4 object synchronously based on the positional information  
5 detected by the first and second measuring devices; and  
6 the second driving system operates to correct a  
7 positional relationship between the first object and the  
8 second object during a synchronous movement of the first  
9 object and the second object.--

1 --60. An apparatus according to claim 37, wherein  
2 the projection system has a projection magnification which  
3 includes reduction magnification.--

a'  
1 --61. An apparatus according to claim 60, wherein  
2 the first driving system and the third driving system  
3 operate separately to move the first object and the second  
4 object synchronously based on the reduction magnification of  
5 the projection system; and  
6 the second driving system operates to correct a  
7 positional relationship between the first object and the  
8 second object during a synchronous movement of the first  
9 object and the second object.--

1 --62. An apparatus according to claim 37, wherein  
2 a speed of movement of said first object and a speed of  
3 movement of said second object are different from each  
4 other.--

1       --63.   An apparatus according to claim 62, wherein  
2   the first driving system and the third driving system  
3   operate separately to move the first object and the second  
4   object synchronously, the first object being moved at a  
5   first speed and the second object being moved at a second  
6   speed; and

7       the second driving system operates to correct a  
8   positional relationship between the first object and the  
9   second object during a synchronous movement of the first  
10   object and the second object.--

a'  
1       --64.   An apparatus according to claim 63, wherein  
2   the first speed is faster than the second speed.--

1       --65.   An apparatus according to claim 37, wherein  
2   said first object and said second object are moved under  
3   respective first and second speed controls which are  
4   different from each other.--

1       --66.   An apparatus according to claim 65, wherein  
2   the first driving system and the third driving system  
3   operate separately to move the first object and the second  
4   object synchronously, the first object being moved under the  
5   first speed control and the second object being moved under  
6   the second speed control; and

7       the second driving system operates to correct a  
8   positional relationship between the first object and the

9 second object during a synchronous movement of the first  
10 object and the second object.--

1 --67. An apparatus according to claim 66, wherein  
2 when said first object is accelerated under said first speed  
3 control, said second object moves at a constant speed under  
4 said second speed control.--

1 --68. A scanning exposure method in which a first  
2 object is moved in a first direction and a second object is  
3 moved in a second direction for a scanning exposure, the  
4 method comprising:

5 moving a first object in the first direction by using a  
6 first driving system;

7 finely shifting the first object by using a second  
8 driving system while the first object is moved by the first  
9 driving system; and

10 moving a second object in the second direction by using  
11 a third driving system.--

56

55

1 --69. A method according to claim 68, wherein  
2 the first object includes a mask having a pattern area, and  
3 the second object includes a work-piece on which a pattern  
4 of the mask is transferred.--

1 --70. A method according to claim 68, wherein  
2 said second driving system rotates said first object.--

32



~~--71. A method according to claim 1, wherein the second driving system is dimensionally.--~~

$$\begin{array}{c} \text{---} \\ | \\ \text{---} \end{array} \begin{array}{c} 1 \\ 2 \end{array}$$

Sub  
y<sup>10</sup>

a

1
2
3
4

1
2
3
4

Sub  
9<sup>2</sup>  
3

1  
2

3 supports the first object, in the first direction, and  
4 the first object is moved in the first direction by  
5 moving the supporting member with the first driving system,  
6 and the second driving system finely shifts the first object  
7 relative to the supporting member.--

1 --78. A method according to claim 77, wherein  
2 the second driving system finely shifts the first object  
3 without a weight of the supporting member.--

1 --79. A method according to claim 68, wherein  
2 the first driving system moves a first supporting member in  
3 the first direction; and  
4 the second driving system finely shifts a second  
5 supporting member, which supports the first object, relative  
6 to the first supporting member,

7 wherein the first object is moved in the first  
8 direction by moving the first supporting member with the  
9 first driving system and is finely shifted by moving the  
10 second supporting member with the second driving system.--

1 --80. A method according to claim 79, wherein  
2 at least a part of said second driving system is provided at  
3 said first supporting member.--

1 --81. A method according to claim 79, wherein  
2 the second driving system finely shifts the second

3 supporting member without a weight of the first supporting  
4 member.--

1 --82. A method according to claim 68, wherein  
2 an exposure beam irradiated onto said first object defines a  
3 rectangular illumination area on said first object.--

1 --83. A method according to claim 69, wherein  
2 said second driving system shifts said first object finely  
3 before the pattern area of said mask begins to be  
4 illuminated with an exposure beam.--

66 55  
1 --84. A method according to claim 68, wherein  
2 the first driving system and the third driving system  
3 operate respectively to move the first object and the second  
4 object synchronously; and  
5 the second driving system operates to correct a  
6 positional relationship between the first object and the  
7 second object during a synchronous movement of the first  
8 object and the second object.--

1 --85. A method according to claim 68, wherein  
2 said first direction and said second direction are parallel  
3 and reverse to one another.--

1 --86. A method according to claim 85, wherein  
2 the first driving system and the third driving system

3 operate separately to move the first object and the second  
4 object synchronously in the respective first and second  
5 directions; and

6 the second driving system operates to correct a  
7 positional relationship between the first object and the  
8 second object during a synchronous movement of the first  
9 object and the second object.--

1 --87. A method according to claim 68, further  
2 comprising:

3 measuring positional information of the first object;  
4 and  
5 measuring positional information of the second  
6 object.--

1 --88. A method according to claim 87, wherein  
2 the first driving system and the third driving system  
3 operate separately to move the first object and the second  
4 object synchronously based on the respective detected  
5 positional information of the first and second objects; and  
6 the second driving system operates to correct a  
7 positional relationship between the first object and the  
8 second object during a synchronous movement of the first  
9 object and the second object.--

1 --89. A method according to claim 68, wherein  
2 the first driving system and the third driving system

3 operate separately to move the first object and the second  
4 object synchronously based on a projection magnification of  
5 a projection system which is used for the scanning exposure,  
6 the projection magnification including reduction  
7 magnification; and

8 the second driving system operates to correct a  
9 positional relationship between the first object and the  
10 second object during a synchronous movement of the first  
11 object and the second object.--

a'  
1 --90. A method according to claim 68, wherein a  
2 speed of movement of said first object and a speed of  
3 movement of said second object are different from each  
4 other.--

1 --91. A method according to claim 90, wherein  
2 the first driving system and the third driving system  
3 operate separately to move the first object and the second  
4 object synchronously, the first object being moved at a  
5 first speed and the second object being moved at a second  
6 speed; and

7 the second driving system operates to correct a  
8 positional relationship between the first object and the  
9 second object during a synchronous movement of the first  
10 object and the second object.--

1       --92. A method according to claim 91, wherein  
2       the first speed is faster than the second speed.--

1       --93. A method according to claim 68, wherein  
2       said first object and said second object are moved under  
3       respective first and second speed controls which are  
4       different from each other.--

a1  
1       --94. A method according to claim 93, wherein  
2       the first driving system and the third driving system  
3       operate separately to move the first object and the second  
4       object synchronously, the first object being moved under the  
5       first speed control and the second object being moved under  
6       the second speed control; and  
7       the second driving system operates to correct a  
8       positional relationship between the first object and the  
9       second object during a synchronous movement of the first  
10       object and the second object.--

1       --95. A method according to claim 94, wherein  
2       when said first object is accelerated under said first speed  
3       control, said second object moves at a constant speed under  
4       said second speed control.--

321  
1       --96. A circuitry element produced with use of the  
2       method as defined in claim 68.--

Sub  
G13

a

1        --97. A method for making a scanning exposure  
2 apparatus in which a first object is moved in a first  
3 direction and a second object is moved in a second direction  
4 for a scanning exposure, the method comprising:  
5        providing a projection system for the scanning  
6 exposure, which is disposed between the first object and the  
7 second object;  
8        providing a first driving system which moves the first  
9 object in the first direction, at least a part of the first  
10 driving system being on one side of the projection system;  
11        providing a second driving system which finely moves  
12 the first object while the first object is moved by the  
13 first driving system, at least a part of the second driving  
14 system being on the one side of the projection system; and  
15        providing a third driving system which moves the second  
16 object in the second direction, at least a part of the third  
17 driving system being on the other side of the projection  
18 system.--

76

75

1        --98. A method according to claim 97, wherein  
2 the first object includes a mask having a pattern area, and  
3 the second object includes a work-piece on which a pattern  
4 of the mask is transferred.--

Sub  
G14

1        --99. A method according to claim 97, wherein  
2 said second driving system rotates said first object.--

35

--100. A method according to claim 97, wherein said second driving system moves said first object two-dimensionally.--

10 -401. A method according to claim 97, wherein  
said first driving system includes a linear motor.--

--102. A method according to claim 97, wherein said third driving system includes a linear motor.--

--103. A method according to claim 97, further comprising:  
providing a detecting system which detects a relative relationship between the first object and the second object.--

--104. A method according to claim 103, wherein  
said relative relationship includes a positional deviation  
between said first object and said second  
object.--

--105. A method according to claim 103, wherein  
said detecting system includes an interferometer.--

--106. A method according to claim 97, further comprising:  
providing a supporting member which supports the first



4 object,

5 wherein the first object is moved in the first  
6 direction by moving the supporting member with the first  
7 driving system, and the second driving system finely moves  
8 the first object relative to the supporting member.--

1 --107. A method according to claim 106, wherein  
2 the second driving system finely moves the first object  
3 without a weight of the supporting member.--

1 --108. A method according to claim 97, further  
2 comprising:  
3 providing a first supporting member which is movable in  
4 the first direction; and  
5 providing a second supporting member which is movable  
6 relative to the first supporting member and which supports  
7 the first object,  
8 wherein the first object is moved in the first  
9 direction by moving the first supporting member with the  
10 first driving system and is finely moved relative to the  
11 first supporting member by moving the second supporting  
12 member with the second driving system.--

1 --109. A method according to claim 108, wherein  
2 at least a part of said second driving system is provided at  
3 said first supporting member.--

1        --110. A method according to claim 108, further  
2        comprising:  
3        providing a reflective surface disposed on the second  
4        supporting member; and  
5        providing an interferometer, optically connected to the  
6        reflective surface, which is used for detecting positional  
7        information of the first object.--

1        --111. A method according to claim 108, wherein  
2        the second driving system finely moves the second supporting  
3        member without a weight of the first supporting member.--

1        --112. A method according to claim 97, wherein  
2        an exposure beam irradiated onto said first object defines a  
3        rectangular illumination area on said first object.--

1        --113. A method according to claim 97, wherein  
2        said projection system includes a reflective and refractive  
3        optical system.--

1        --114. A method according to claim 98, wherein  
2        said second driving system moves said first object finely  
3        before the pattern area of said mask begins to be  
4        illuminated with an exposure beam.--

1        --115. A method according to claim 97, wherein  
2        the first driving system and the third driving system

3 operate respectively to move the first object and the second  
4 object synchronously; and  
5 the second driving system operates to correct a  
6 positional relationship between the first object and the  
7 second object during a synchronous movement of the first  
8 object and the second object.--

1 --116. A method according to claim 97, wherein  
2 said first direction and said second direction are parallel  
3 and reverse to one another.--

a 1 --117. A method according to claim 116, wherein  
2 the first driving system and the third driving system  
3 operate separately to move the first object and the second  
4 object synchronously in the respective first and second  
5 directions; and  
6 the second driving system operates to correct a  
7 positional relationship between the first object and the  
8 second object during a synchronous movement of the first  
9 object and the second object.--

1 --118. A method according to claim 97, further  
2 comprising:  
3 providing a first measuring device which detects  
4 positional information of the first object; and  
5 providing a second measuring device which detects  
6 positional information of the second object.--

1       --119. A method according to claim 118, wherein  
2       the first driving system and the third driving system  
3       operate separately to move the first object and the second  
4       object synchronously based on the respective detected  
5       positional information detected by the first and second  
6       measuring devices; and

7       the second driving system operates to correct a  
8       positional relationship between the first object and the  
9       second object during a synchronous movement of the first  
10      object and the second object.--

a1  
1       --120. A method according to claim 97, wherein  
2       the projection system has a projection magnification which  
3       includes reduction magnification.--

1       --121. A method according to claim 120, wherein  
2       the first driving system and the third driving system  
3       operate separately to move the first object and the second  
4       object synchronously based on the reduction magnification of  
5       the projection system; and

6       the second driving system operates to correct a  
7       positional relationship between the first object and the  
8       second object during a synchronous movement of the first  
9       object and the second object.--

1       --122. A method according to claim 97, wherein  
2       a speed of movement of said first object and a speed of  
3       movement of said second object are different from each  
4       other.--

1       --123. A method according to claim 122, wherein  
2       the first driving system and the third driving system  
3       operate separately to move the first object and the second  
4       object synchronously, the first object being moved at a  
5       first speed and the second object being moved at a second  
6       speed; and

21 7       the second driving system operates to correct a  
8       positional relationship between the first object and the  
9       second object during a synchronous movement of the first  
10       object and the second object.--

1       --124. A method according to claim 123, wherein  
2       the first speed is faster than the second speed.--

1       --125. A method according to claim 97, wherein  
2       said first object and said second object are moved under  
3       respective first and second speed controls which are  
4       different from each other.--

1       --126. A method according to claim 125, wherein  
2       the first driving system and the third driving system